

The weather was fine for all outdoor work, and vegetation generally remained green to the end of the month.—*H. C. Bate.*

*Texas.*—The mean temperature was 70.3°, or 2.2° above normal; the highest was 101°, at Camp Eagle Pass on the 5th and at Fort McIntosh on the 6th, and the lowest, 34°, at Menardville on the 10th. The average precipitation was 3.30, or 1.06 above normal; the greatest monthly amount, 7.10, occurred at Wichita Falls, and the least, 1.15, at Waco.

Conditions being favorable, corn gathering was prosecuted with vigor. The quality of the crop was not all that could be desired, much of it being reported damaged either by weevil or rain. The yield, as a whole, was considerably below the average.

Cotton picking was rushed during the month, advantage being taken of the favorable conditions. This work was somewhat delayed during the third decade by the rainy weather. There were scattered complaints of the scarcity of pickers. Notwithstanding this, the work was well advanced, and the close of the month found the crop practically picked, except over the northern and western portions. The crop was generally below the average in amount, having been injured to some extent by worms and other pests, and also by the hurricane which swept over the State on September 8 and 9.

Wheat sowing was general during the month, the work being somewhat delayed by the rainy weather toward the last of the month. Early-sown wheat came up nicely. The month closes with weather favorable for germination of seed in the ground.

Fall gardening along the coast progressed fairly well, the showers during the third week of the month proving very beneficial.—*I. M. Cline.*

*Utah.*—The mean temperature was 48.9°, or 0.4° above normal; the highest was 95°, at Pinto on the 1st, and the lowest, 1° below zero, at Loa on the 29th. The average precipitation was 0.89, or 0.03 below normal; the greatest monthly amount, 2.88, occurred at Huntsville, while none fell at Castle Dale and Wellington.—*L. H. Murdock.*

*Virginia.*—The mean temperature was 61.9°, or 5° above normal; the highest was 93°, at Barboursville on the 6th, and the lowest, 26°, at Meadowdale on the 17th and at Burke's Garden on the 18th. The average precipitation was 3.01, or 0.22 below normal; the greatest monthly amount, 5.46, occurred at Clifton Forge, and the least, 0.95, at Callaville.

The weather was favorable for farm work and for the germination of seed.—*E. A. Evans.*

*Washington.*—The mean temperature was 48.9°, or 0.3° below normal; the highest was 82°, at Colfax on the 16th, and the lowest, 20°, at Centerville on the 7th. The average precipitation was 4.75, or 2.24 above normal; the greatest monthly amount, 17.64, occurred at Clearwater, and the least, 0.48, at Connell.—*G. N. Salisbury.*

*West Virginia.*—The mean temperature was 60.9°, or 6.2° above normal; the highest was 96°, at Byrne on the 7th, and the lowest, 24°, at Philippi on the 18th. The average precipitation was 2.33, or 0.26 below normal; the greatest monthly amount, 4.80, occurred at Lewisburg, and the least, 1.15, at Martinsburg.

The weather was favorable for farm work, and in well-prepared ground wheat is coming up nicely and is in fairly good condition.—*E. C. Vose.*

*Wisconsin.*—The mean temperature was 56.4°, or 8.1° above normal; the highest was 91°, at Watertown on the 3d, and the lowest, 10°, at Barron on the 8th. The average precipitation was 5.92, or 3.54 above normal; the greatest monthly amount, 12.09, occurred at La Crosse, and the least, 1.87, at Racine.—*W. M. Wilson.*

*Wyoming.*—The mean temperature was 46.5°, or 2.0° above normal; the highest was 90°, at Cody on the 12th, and the lowest, 8°, at Bittercreek on the 30th. The average precipitation was 0.58, or 0.23 below normal; the greatest monthly amount, 1.81, occurred at South Pass City, while none fell at Hyattville.—*W. S. Palmer.*

## SPECIAL CONTRIBUTIONS.

### LIGHTNING FROM A CLOUDLESS SKY.

By B. S. PAGUE, Local Forecast Official, Detroit, Mich., dated October 5, 1900.

I was much interested in the report of J. N. Weed, of Newburg, N. Y., concerning lightning from a cloudless sky and the comments thereon, as published on pages 292 and 293 of the MONTHLY WEATHER REVIEW for July, 1900. A few hours after reading the report and the comments I had the opportunity to observe lightning from a cloudless sky. The circumstances were as follows: On October 4, 1900, the weather map showed conditions somewhat favorable for thunderstorms over the greater portion of upper and lower Michigan and over the surrounding region; the local forecast for Detroit was for fair weather; during the afternoon of October 4, owing to dark appearing clouds in the southwest, it looked as though a thundershower might occur in this vicinity before midnight. The clouds kept well to the south and were of the cumulus form. About 5 o'clock rain apparently was falling over in Canada about 10 miles south and southeast of this station. As sunset approached the clouds disappeared from the horizon, except on the south and southeast sides. About 7:45 p. m. (local, sun time) I started on a bicycle, riding out Woodward avenue, which is in a straight line northwestward from the thunder and lightning then prevailing over in Canada. After riding about thirty minutes, and being then about 15 miles from where the thunderstorm was in progress, I observed flashes of lightning. The evening was nearly calm, the temperature very pleasant, and not a cloud was observed in the sky. After riding about two miles more I dismounted and looked carefully for clouds, but none were visible. Lightning was very distinct in the south and east; with my back to the place whence I knew the lightning came, I could see overhead flashes of lightning, in the form of sheets, which, like Mr. Weed, I would characterize as of rather delicate type. It continued and increased, waxing and waning. The lightning occurred at frequent intervals all along the horizon from the south to the southeast, with flashes overhead. Returning to my residence I was then facing and riding toward the horizon

whence came the distant flashes; after riding about four miles I was in a position to see what appeared to be a long streak of clouds extending from the main body northwestward; from this extended cloud the lightning appeared to come.

Now, had I not known that a thunderstorm was prevailing over in Canada and had I observed the lightning only from my most distant point (about 17 miles) from the storm I should have maintained with apparent correctness that the lightning was from a cloudless sky. This occurrence of lightning from an apparently cloudless sky reminds me of rain from a cloudless sky, which I observed in Oregon a short time ago. The rainfall, as I discovered within an hour afterward, was from a cloud at some distance in the southwest, not seen where I saw and felt the rain; the rain occurred about 9 p. m.; the sky was clear, but going on my wheel about three miles toward the southwest I saw the cloud from which the rain fell; the wind had carried the rain to the place where I observed it.

Returning now to Mr. Weed's report he states first at 7:30 a light wind "mere breathings;" at 9 p. m. a sudden gust and "some minutes later succeeded by another gust of more force." The gusts then came more frequently and "soon developed into a cold, gusty wind." He then states:

Our horizon in the northeast quadrant is low. In the southeast, limited by mountain crests from 4 to 7 miles distant, and ranging from 1,000 to 1,600 feet high. Beyond this horizon are a succession of other mountains hidden from our view, with deep valleys between, including the Valley of the Hudson River. The night was cloudless until the wind came. Soon after this a few cloudlets of stratus formed near the north end of the mountains, say east-northeast, near the horizon, but disappeared before the appearance of the phenomena I am about to mention. At the moment of the rising of Fomalhaut above the mountains southeast we noticed a gleam of lightning, of rather delicate type, just to the left of the star and back of the mountains.

The lightning continued until they left, about 1 a. m.

The lightning occurred at frequent intervals all along the horizon from the point of origin to near the east point and was undoubtedly true lightning.

The experience of Mr. Weed was the same as mine, with

this difference, I knew a thunderstorm was prevailing beyond my night horizon and he did not. It is well known that the night horizon of an observer is much less than it is in day time, and this I think accounts for the lightning from a cloudless sky as well as for rain from a cloudless sky, both phenomena being reported, as a rule, as having been observed at night. Mr. Weed reports the mountains southeast of his location, and the appearance of clouds about the north end of the mountain and the lightning left of the star and back of the mountains; this places the mountains in the southeast, the lightning east-southeast, and the clouds east and east-northeast; the wind was from the northeast, hence the clouds were evidently driven east of the mountain summits southward, causing the clouds to be beyond the night horizon of Mr. Weed and further, hid by the mountain peaks, so that the clouds should be about where the lightning came from; the lightning flashed upward and could be plainly seen while the clouds were below the horizon or behind the peaks. The description which Mr. Weed gives of the wind indicates also the possibility of a slight disturbance, possibly a local thunderstorm of mild intensity. It is well known that local storms, especially thunder squalls or storms, occur even when the weather map shows no signs of it.

#### MONTHLY STATEMENT OF AVERAGE WEATHER CONDITIONS FOR OCTOBER.

By Prof. E. B. GARRIOTT.

The following statements published on October 1, are based on average weather conditions for October as determined by long series of observations. As the weather of any given October does not conform strictly to the average conditions, the statements can not be considered as forecasts:

In October the storms of the middle latitudes of the north Atlantic Ocean become more frequent and severe and the winds are more pronounced in force and hold more steadily from westerly quarters.

The season of West Indian hurricanes terminates frequently with storms of maximum seasonal severity, and the severer storms are usually experienced in Cuba and the Bahamas. In Porto Rico and the Lesser Antilles storms are less frequent than in August and September. In the Philippine Islands and along the southeastern coasts of Asia typhoons occur less frequently than during September and the late summer months.

In October the wet season begins on the Pacific coast of the United States and rain becomes more general over the middle and northern Plateau regions. In the Rocky Mountain districts and Arizona October rains are light as compared with those of the summer months. Over the country generally from the Rocky Mountains to the Mississippi River there is a diminution of rainfall from June to December. East of the Mississippi the total precipitation averages less than for the summer months, but is more evenly distributed in the form of general rains.

Damaging frost is likely to occur in the United States in October as far south as the interior of the Gulf and South Atlantic States.

#### OBSERVATIONS AT HONOLULU.

Through the kind cooperation of Mr. Curtis J. Lyons, Meteorologist to the Government Survey, the monthly report of meteorological conditions at Honolulu is now made partly in accordance with the new form, No. 1040, and the arrangement of the columns, therefore, differs from those previously published.

#### Meteorological observations at Honolulu, October, 1900.

The station is at 21° 18' N., 157° 50' W.  
Hawaiian standard time is 10<sup>h</sup> 30<sup>m</sup> slow of Greenwich time. Honolulu local mean time is 10<sup>h</sup> 31<sup>m</sup> slow of Greenwich.  
Pressure is corrected for temperature and reduced to sea level, and the gravity correction, -0.06, has been applied.  
The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 12, or Beaufort scale. Two directions of wind, or values of wind force or amounts of cloudiness, connected by a dash, indicate change from one to the other.  
The rainfall for twenty-four hours is measured at 9 a. m. local or 7:31 p. m., Greenwich time, on the respective dates.  
The rain gage, 8 inches in diameter, is 1 foot above ground. Thermometer, 9 feet above ground. Ground is 43 feet, and the barometer 50 feet above sea level.

| Date.      | Pressure at sea level. |           | Temperature. |          | During twenty-four hours preceding 1 p. m., Greenwich time, or 2:29 a. m., Honolulu time. |                    |                       |         |                     |                      |          |       |      |       | Total rainfall at 9 a. m. local time. |
|------------|------------------------|-----------|--------------|----------|---|--------------------|-----------------------|---------|---------------------|----------------------|----------|-------|------|-------|---------------------------------------|
|            | Dry bulb.              | Wet bulb. | Temperature. |          | Means.  |                    | Wind.                 |         | Average cloudiness. | Sea-level pressures. |          |       |      |       |                                       |
|            |                        |           | Maximum.     | Minimum. | Dew-point.  | Relative humidity. | Prevailing direction. | Force.  |                     | Maximum.             | Minimum. |       |      |       |                                       |
| 1.....     | 29.92                  | 70        | 68           | 85       | 69  | 67.5               | 75                    | ssw-w.  | 1-0                 | 3-0                  | 29.96    | 29.86 | 0.00 |       |                                       |
| 2.....     | 29.95                  | 76        | 71.5         | 87       | 70  | 68.5               | 75                    | sw-nne. | 1-2                 | 3                    | 30.01    | 29.89 | 0.26 |       |                                       |
| 3.....     | 29.95                  | 76        | 68.5         | 83       | 75  | 66.5               | 70                    | ne.     | 1-4                 | 5                    | 30.02    | 29.93 | 0.01 |       |                                       |
| 4.....     | 29.95                  | 75        | 68           | 83       | 75  | 65.5               | 65                    | ne.     | 3                   | 6                    | 30.02    | 29.94 | 0.18 |       |                                       |
| 5.....     | 29.97                  | 75        | 68           | 83       | 70  | 65.0               | 65                    | nne.    | 4                   | 4                    | 30.03    | 29.95 | 0.08 |       |                                       |
| 6.....     | 29.92                  | 72        | 67.5         | 82       | 72  | 64.5               | 66                    | ne.     | 3-0                 | 5-8                  | 30.01    | 29.93 | 0.09 |       |                                       |
| 7.....     | 29.85                  | 71        | 67.5         | 83       | 70  | 66.0               | 71                    | ne.     | 2                   | 5                    | 29.94    | 29.86 | 0.07 |       |                                       |
| 8.....     | 29.84                  | 68        | 66.5         | 84       | 70  | 66.0               | 72                    | ne.     | 1-0                 | 1                    | 29.91    | 29.81 | 0.00 |       |                                       |
| 9.....     | 29.86                  | 72        | 69           | 83       | 68  | 66.7               | 74                    | sw.     | 1-0                 | 2-0                  | 29.92    | 29.83 | 0.01 |       |                                       |
| 10.....    | 29.90                  | 70        | 68.5         | 84       | 71  | 67.5               | 73                    | sw-ne.  | 1-2                 | 2-10                 | 29.94    | 29.87 | 0.20 |       |                                       |
| 11.....    | 29.91                  | 75        | 71.5         | 87       | 70  | 69.5               | 80                    | s.      | 1                   | 3-8                  | 29.97    | 29.89 | 0.00 |       |                                       |
| 12.....    | 29.90                  | 77        | 71.5         | 87       | 83  | 70.3               | 73                    | se-ne.  | 0-2                 | 7-3                  | 29.98    | 29.88 | 0.00 |       |                                       |
| 13.....    | 29.86                  | 72        | 69           | 85       | 76  | 69.3               | 70                    | ne.     | 1-3                 | 4                    | 29.93    | 29.86 | 0.00 |       |                                       |
| 14.....    | 29.81                  | 70        | 67           | 85       | 71  | 68.0               | 74                    | nne.    | 3                   | 3-7                  | 29.90    | 29.81 | 0.06 |       |                                       |
| 15.....    | 29.85                  | 68        | 63.5         | 84       | 69  | 63.7               | 65                    | nne.    | 1                   | 1-0                  | 29.88    | 29.78 | 0.00 |       |                                       |
| 16.....    | 29.89                  | 76        | 70           | 84       | 65  | 63.5               | 67                    | w-nne.  | 2-0                 | 1-2                  | 29.94    | 29.84 | 0.00 |       |                                       |
| 17.....    | 29.94                  | 77        | 72           | 84       | 76  | 69.0               | 77                    | nne.    | 2-0                 | 4-10                 | 30.02    | 29.92 | 2.68 |       |                                       |
| 18.....    | 30.04                  | 77        | 71.5         | 82       | 68  | 70.3               | 78                    | ne.     | 3                   | 10-6                 | 30.06    | 29.96 | 0.13 |       |                                       |
| 19.....    | 30.07                  | 76        | 69.5         | 83       | 75  | 68.5               | 71                    | ne.     | 3                   | 10-8                 | 30.11    | 30.03 | 0.07 |       |                                       |
| 20.....    | 30.01                  | 76        | 69           | 82       | 74  | 65.7               | 68                    | ne.     | 4-2                 | 5-3                  | 30.11    | 30.01 | 0.00 |       |                                       |
| 21.....    | 29.98                  | 73        | 69           | 83       | 76  | 67.0               | 68                    | ne.     | 3                   | 4                    | 30.04    | 29.95 | 0.54 |       |                                       |
| 22.....    | 29.97                  | 75        | 70           | 79       | 71  | 67.0               | 75                    | ne.     | 2-5                 | 10-6                 | 30.03    | 29.96 | 0.81 |       |                                       |
| 23.....    | 29.99                  | 77        | 69           | 80       | 70  | 68.3               | 73                    | ne.     | 3                   | 7                    | 30.04    | 29.96 | 0.17 |       |                                       |
| 24.....    | 29.99                  | 76        | 69           | 80       | 74  | 66.7               | 70                    | ne.     | 4                   | 7-10                 | 30.06    | 29.97 | 0.36 |       |                                       |
| 25.....    | 29.99                  | 76        | 69           | 80       | 72  | 67.0               | 71                    | ne.     | 3-5                 | 8-3                  | 30.04    | 29.97 | 0.26 |       |                                       |
| 26.....    | 29.96                  | 76        | 69           | 81       | 72  | 67.0               | 71                    | ne.     | 3-5                 | 4                    | 30.03    | 29.94 | 0.17 |       |                                       |
| 27.....    | 29.96                  | 75        | 69           | 79       | 72  | 66.3               | 69                    | ne.     | 3-5                 | 6                    | 30.03    | 29.93 | 0.15 |       |                                       |
| 28.....    | 30.00                  | 74        | 69           | 80       | 73  | 66.0               | 69                    | ne.     | 4-5                 | 7                    | 30.06    | 29.98 | 0.09 |       |                                       |
| 29.....    | 30.00                  | 75        | 69           | 80       | 74  | 66.7               | 72                    | ne.     | 3-5                 | 7                    | 30.07    | 30.00 | 0.15 |       |                                       |
| 30.....    | 29.96                  | 76        | 68.5         | 81       | 71  | 65.7               | 67                    | ne.     | 5-6                 | 4-2                  | 30.06    | 29.95 | 0.11 |       |                                       |
| 31.....    | 29.94                  | 75        | 69.5         | 81       | 72  | 65.7               | 69                    | ne.     | 5                   | 4                    | 30.02    | 29.94 | 0.23 |       |                                       |
| Sums..     |                        |           |              |          |   |                    |                       |         |                     |                      |          |       |      |       |                                       |
| Means.     | 29.953                 | 74.0      | 69.0         | 82.4     | 71.8  | 66.9               | 71.0                  |         | 2.7                 | 5.2                  |          |       |      | 6.88  |                                       |
| Departure. | -.006                  |           |              |          |   | +0.7               | 0.0                   |         |                     |                      | +0.9     |       |      | +4.42 |                                       |

Mean temperature for October, 1900 (6+2+9)÷3=76.9; normal is 76.3. Mean pressure for October (9+3)÷2 is 29.960; normal is 29.966.

\* This pressure is as recorded at 1 p. m., Greenwich time. † These temperatures are observed at 6 a. m., local, or 4:31 p. m., Greenwich time. ‡ These values are the means of (6+9+2+9)÷4. § Beaufort scale.

#### RECENT PAPERS BEARING ON METEOROLOGY.

W. F. R. PHILLIPS, in charge of Library, etc.

The subjoined list of titles has been selected from the contents of the periodicals and serials recently received in the library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau:

*Nature*. London. Vol. 62.

MacDowall A. B. Sunspots and Frost. P. 599.

*Ciel et Terre*. Bruxelles. 21me année.

Arctowski, H. Sur les conditions météorologiques des régions antarctiques. P. 379.

Polis, P., et Sieberg, A. L'Observatoire météorologique d'Aix-la-Chapelle. P. 384.

Teisserenc de Bort, L. Sur la mode de formation des types d'isobares. P. 389.